



## Maths-it Podcast H-16

Higher GCSE Revision

### Circles

## Topics

Area and circumference – Length of arc – Area of sector and segment

## Questions

1.

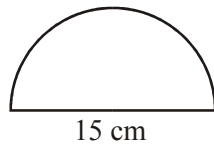


Diagram **NOT**  
accurately drawn

The diagram shows a semi-circle.  
The diameter of the semi-circle is 15 cm.

Calculate the perimeter of the semi-circle.  
Give your answer correct to 3 significant figures.

.....  
(Total 3 marks)

2. A circle has a radius of 7.8 cm.  
Work out the area of the circle.

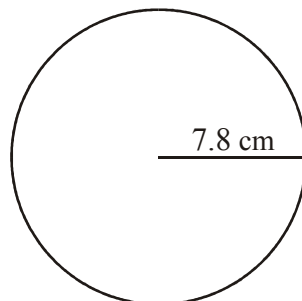
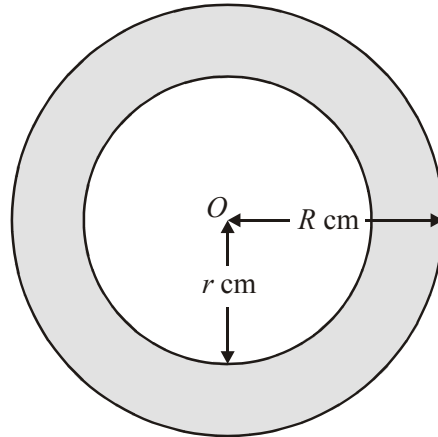


Diagram **NOT** accurately drawn

.....  
(Total 3 marks)

3. The diagram shows two circles.

Diagram **NOT**  
accurately drawn



$O$  is the centre of both circles.

The radius of the outer circle is  $R$  cm.

The radius of the inner circle is  $r$  cm.

$R = 6.1$  correct to 1 decimal place.

$r = 2.9$  correct to 1 decimal place.

- (a) John says that the maximum possible diameter of the outer circle is 12.25 cm. Explain why John is wrong.

.....

.....

.....

(2)

The upper bound for the area, in  $\text{cm}^2$ , of the shaded region is  $k\pi$ .

- (b) Find the **exact** value of  $k$ .

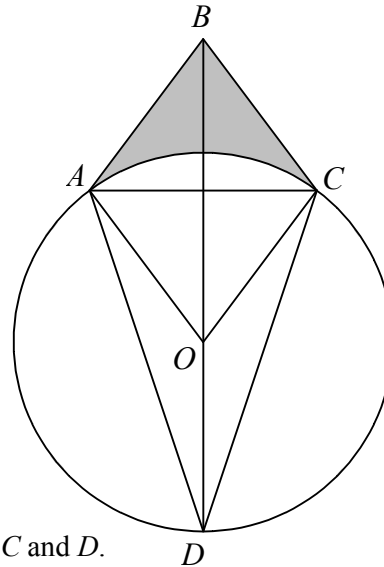
$k = \dots\dots\dots$

(4)

(Total 6 marks)

4. The diagram shows part of a pattern on a stained glass window.

Diagram NOT  
accurately drawn



$ABCO$  is a rhombus.

$ABCD$  is a kite.

$BE$  is a diagonal of  $ABCD$ .

$O$  is the centre of the circle passing through  $A$ ,  $C$  and  $D$ .

$AB = 12$  cm.

Angle  $ABC = 60^\circ$ .

- (a) Calculate the size of angle  $ADC$ .

.....<sup>o</sup>

(1)

- (b) Calculate the size of angle  $AOD$ .

.....<sup>o</sup>

(1)

- (c) Calculate the length of the arc  $AC$ .  
Give your answer correct to 3 significant figures.

..... cm

(4)



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### ***Circles***

- (d) (i) Calculate the area of triangle  $OAC$ .

.....  $\text{cm}^2$

- (ii) Hence find the area of  $ABCO$ .

.....  $\text{cm}^2$

- (c) Calculate the shaded area.  
Give your answer correct to 3 significant figures.

(4)

..... m

(3)

(Total 13 marks)